Remarks

Reconsideration and withdrawal of the rejections set forth in the above-mentioned Official Action in view of the foregoing amendments and the following remarks are respectfully requested.

Claims 1-41 are now pending in the application, with Claims 1, 12 and 23 being independent. Claims 1, 3-5, 8, 12, 14-16, 19, 23, 24, 26, 27, 29, 31, 32, 34 and 35 have been amended and Claims 36-41 have been added herein.

Claims 1-3, 7, 11-14, 18, 22-27, 29-32, 34 and 35 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 5,497,174 (Stephany et al.). Claims 6 and 17 were rejected under 35 U.S.C. § 103 as being unpatentable over Stephany et al. in view of U.S. Patent No. 6,183,056 (Corrigan et al.). Claims 4, 5, 10, 15, 16 and 21 were rejected under § 103 as being unpatentable over Stephany et al. in view of European Patent Application No. 0 626 266 (Nagoshi et al.). Claims 8 and 19 were rejected under § 103 as being unpatentable over Stephany et al. in view of U.S. Patent No. 5,223,853 (Wysocki et al.). Claims 9 and 20 were rejected under § 103 as being unpatentable over Stephany et al. in view of U.S. Patent No. 5,289,207 (Ebisawa). Claims 28 and 33 were rejected under § 103 as being unpatentable over Stephany et al. in view of U.S. Patent No. 5,610,638 (Courtney). These rejections are respectfully traversed.

Independent Claim 1 is directed to a printing apparatus for performing printing by using a printhead having a plurality of printing elements. Independent Claim 12 is directed to a method of controlling such a printing apparatus and independent Claim 23 is directed to a computer-readable memory storing program codes of control of such a

printing apparatus. Each independent claim recites means for, steps of or program codes of determining a fundamental pulse shape on the basis of a driving condition according to a condition of the printhead in a period other than a printing period, counting the number of simultaneously driven printing elements of the plurality of printing elements in the printing period, and controlling a driving pulse to be applied to printing elements used in the printing of the printing data. The driving pulse is a pulse generated in the printing period by correcting the determined fundamental pulse shape on the basis of the counted number of simultaneously driven printing elements.

With the above arrangements and method, determination of the fundamental pulse shape can be executed in advance in a period other than a printing period where the time margin is sufficient. Correction of the fundamental pulse to generate a driving pulse on the basis of the number of simultaneously driven print elements can be executed in the printing period. That is, the determination based on the condition of the printhead (e.g., the temperature of the printhead), which may change slowly, and the correction of the fundamental pulse, which is to be performed in a very short time cycle (e.g., 10 μsec), can be executed separately at different timings. As a result, rapid correction of the driving pulse on the basis of the number of simultaneously driven printing elements can be effected. In addition, because a table for the determination and a table for the correction can be managed separately, each table size can be reduced.

As discussed previously, Stephany et al. describes an ink jet printer that sets a driving pulse width by look-up tables contained in a ROM1 46. In one embodiment, three parameters are input into ROM1 46 to determine the pulse width, including a two-bit

word representing the number of heater elements to be fired from ROM2 44, the count of counter 56 representing the relative position on the printhead of the heater elements to be fired, and printhead temperature from thermistor 60. Numerous look-up tables, each reflective of a particular combination of printing conditions, can be made available from ROM1 46. These printing conditions include desired spot size, a particular type of ink, and a particular type of copy sheet. Based on the particular addresses selected in ROM1 46, the appropriate duration of the heater pulse can be determined after every cycle of ejection of ink.

However, Applicants submit that Stephany et al. does not disclose or suggest determining a fundamental pulse shape on the basis of a driving condition according to a condition of the printhead in a period other than a printing period, counting the number of simultaneously driven printing elements of the plurality of printing elements in the printing period, and controlling a driving pulse, with the driving pulse being a pulse generated in the printing period by correcting the fundamental pulse shape on the basis of the number of simultaneously driven printing elements, as is recited in independent Claims 1, 12 and 23.

Thus, Stephany et al. fails to disclose or suggest important features of the present invention recited in the independent claims.

The remaining citations have been reviewed, but are not believed to remedy the deficiencies of Stephany et al. noted above with respect to the independent claims.

Thus, independent Claims 1, 12 and 23 are patentable over the citations of record. Reconsideration and withdrawal of the §§ 102 and 103 rejections are respectfully requested.

For the foregoing reasons, Applicants respectfully submit that the present invention is patentably defined by independent Claims 1, 12 and 23. Dependent Claims 2-11, 13-22 and 24-41 are also allowable, in their own right, for defining features of the present invention in addition to those recited in their respective independent claims. Individual consideration of the dependent claims is requested.

Applicants submit that the present application is in condition for allowance. Favorable reconsideration, withdrawal of the rejections set forth in the above-noted Office Action, and an early Notice of Allowance are requested.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,

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